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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,819

02/10/2006

Klaus Kohlmann-Von Platen

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VENABLE LLP

P.O. BOX 34385

WASHINGTON, DC 20043-9998

EXAMINER

SMITH, BRADLEY

ART UNIT

PAPER NUMBER

2894

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,819	Applicant(s) KOHLMANN-VON PLATEN ET AL.	
	Examiner Bradley K. Smith	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/30/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, at least one second vertical power component extending from said front side to said back side of said silicon substrate, separated from said first vertical power component by a second trench filled with an insulation, said second trench extending from said front side to said back side of said silicon substrate, and wherein said at least one second vertical power component is designed approximately ring-shaped and/or disk-shaped and is arranged eccentrically or concentrically around said common point of reference on said silicon substrate must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US 5,909,626) in view of Nakagawa et al (US 5,294,825).

Kobayashi disclose at least one first vertical power component and at least one lateral, active component area (9) extending from a front side to the back side of the substrate (1), between which at least one trench (10) filled with an insulation (12) is placed, said at least one trench extending from said front side to said back side of the silicon substrate (1), wherein said insulation (12) comprises at least partly one dielectric and said at least one vertical power component (diode) (see figure 4e) and said at least one lateral, active component (area) are designed approximately ring-shaped and/or disk-shaped and are arranged eccentrically or concentrically around a common point of reference (the area (9) is surrounded by dielectric material (see column 7 lines 50-60)) on a silicon substrate (4). Regarding claim 11, Kobayashi disclose a diode (figure 4e) which is N+ and the N- region. Regarding claim 12, Kobayashi would inherently be suited for the same voltages since the reference discloses the same structure.

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Regarding claims 13 and 14, Kobayashi disclose the isolation layer comprises both a dielectric and polysilicon (see column 7 lines 37-47). Regarding claim 17, Kobayashi disclose an dielectric (103) is applied on the back of said substrate (1) (fig. 6A). Regarding claim 18, Kobayashi disclose wherein said dielectric (3) is provided with openings through which said power component is contactable (fig. 1f).

Kobayashi fails to disclose the active component.

However Nakagawa disclose an active lateral component between the isolation material (see figures 1 and 2). Regarding claim 15, Nakagawa disclose the active component is encompassed by at least one filled trench. Regarding claim 16, Nakagawa disclose the active component is in a doped trough (see figure 61).

Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Kobayashi and Nakagawa because the isolation of the active lateral device will help improve the lateral device performance by reducing leakage.

Response to Arguments

Applicant's arguments filed 6/30/09 have been fully considered but they are not persuasive.

The applicant contends that Kobayashi fails to disclose “trench extending from said front side of the substrate to said back side of the substrate”. However the examiner would like to note Kobayashi disclose element (1) as a silicon substrate. Therefore the examiner understands that the isolation regions (11, 12) extend from the front side to the second side of the substrate (1) (fig. 4e).

Allowable Subject Matter

Claim 19 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor suggests at least one second vertical power component extending from said front side to said back side of said silicon substrate, separated from said first vertical power component by a second trench filled with an insulation, said second trench extending from said front side to said back side of said silicon substrate, and wherein said at least one second vertical power component is designed approximately ring-shaped and/or disk-shaped and is arranged eccentrically or concentrically around said common point of reference on said silicon substrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is 571-272-1884. The examiner can normally be reached on 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bradley K Smith/
Primary Examiner, Art Unit 2894